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10/800,569	03/15/2004	Hideo Yoshizawa	KON-1859	9832

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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,569	YOSHIZAWA ET AL.	
	Examiner	Art Unit	
	Janis L. Dote	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6,7,9,10,13-15 and 18-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6,7,9,10,13-15 and 18-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/22/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The examiner acknowledges the amendments to claims 1, 6, 9, and 10, the cancellation of claims 3, 5, 8, 11, 16, and 17, and the addition of claim 20 filed on Dec. 13, 2007. Claims 1, 6, 7, 9, 10, 13-15, and 18-20 are pending.

The examiner notes that originally filed claim 8 provides antecedent basis for the claim limitation recited in newly added claim 20.

2. The "Amendment to the claims" section filed on Oct. 12, 2007, did not comply with 37 CFR 1.121 for the reasons set forth in the Notice of non-compliant amendment mailed on Dec. 10, 2007. Accordingly, that "Amendment to the claims" section has not been entered.

3. The examiner has crossed-out the reference JP 2001-265040 listed on the form PTO-1449 filed in the Information disclosure statement (IDS) filed on Oct. 22, 2007. The examiner has already considered the reference, which is listed on the form PTO-892 attached to the office action mailed on Jul. 10, 2006.

4. The examiner has determined that the instant specification defines the following terms:

(1) The term "average circular degree" (also referred to as the "average value of the shape coefficient") of the toner is defined at page 16, line 12, to page 17, line 5, of the specification, as the average value of the equation:

"shape coefficient = (circumference length of the circle calculated from the circle equivalent diameter of the toner particle)/(circumference length of the projection image of the particle)."

(2) The term "surface roughness Ra" recited in instant claim 1 was determined according to the definition, "center line roughness Ra defined in JIS B601 was extended to three dimension so that it can be applicable to a measured plane and is 'a value averaging absolute values of a deviation from a standard plane to a specified plane,'" expressed by the equation disclosed at page 14, line 14, to page 15, line 4, of the instant specification.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The reference US 2003/0180646 A1 (Asano) was published on Sep. 25, 2003, prior to the filing date Mar. 15, 2004, of the instant application. Accordingly, Asano qualifies as prior art under 35 U.S.C. 102(a), as well as under 35 U.S.C. 102(e).

7. Claims 1, 9, 10, 13-15, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano combined with: (1) Japanese Patent 09-274417 (JP'417); (2) US 2002/0076636 A1 (Uchida), and (3) US 6,338,929 B1 (Hagi). See the USPTO English-language translation of JP'417 for cites.

Asano teaches an image forming method comprising the steps of: (1) developing a latent image on a photoreceptor with a developer comprising a toner; (2) transferring the toner image to a recording medium; (3) fixing the toner image to the recording medium; and (4) removing the toner remaining on the photoreceptor with a cleaning device. Asano further teaches a full color image forming method comprising the steps of: (1) forming four electrostatic latent images on four photoreceptors, which correspond to a yellow image, a magenta image, a cyan image, and a black image, respectively; (2) developing the four latent images, respectively, with a yellow toner, a magenta toner, a cyan toner, and a black toner; (3) transferring the yellow toner image, the magenta toner

image, the cyan toner image, and the black toner image from the four photoreceptors to a receiving member; (4) fixing the toner images to the receiving member; and (5) cleaning the toner remaining on each of the four photoreceptors with a cleaning device. Fig. 1; and paragraphs 0048-0051, 0061, and 0371.

The photoreceptor comprises a conductive substrate and a surface layer that comprises "hydrophobicity" treated silica particles having a number average particle size of 45 nm. The surface layer has a surface roughness of 35.6 nm, i.e., 0.0356 μm. See Preparation of Photoreceptor 22 in paragraph 0356 and in Table 6 at page 25, example 8. (Note that the photoreceptor nos. listed in Table 6 should have the numeral "2" before the stated number, e.g., "2" in example 8 should be -- 22 --.) The Asano surface roughness Ra has the same definition as the surface roughness Ra recited in instant claim 1. See Asano, paragraphs 0116-0120 and paragraph 4 supra. The photoreceptor surface layer meets the surface layer limitations recited in instant claims 1 and 19.

The Asano cleaning device comprises an elastic rubber cleaning blade **66A** and a brush **66C**. Fig. 5, and paragraphs 0070 and 0077. The cleaning blade **66A** contacts the photoreceptor in a direction counter to the rotating direction of the photoreceptor. Paragraph 0072. The brush **66C** comprises fibers

having preferably a thickness of 5 to 20 deniers.

Paragraph 0084. The upper limit of the Asano fiber thickness range, 20 deniers, is within the thickness range 6 to 30 deniers recited in instant claim 9. The Asano fiber thickness range also overlaps the range recited in instant claim 9. Asano further teaches that the density of brush fibers of the brush **66C** is from 4.5 x 10^2/cm^2 to 2.0 x 10^4/cm^2 (number of brush hairs per one square centimeter). Asano, paragraph 0086. The Asano density of brush fibers overlaps the density range of 4.5 x 10^2f/cm^2 to 15.5 x 10^2f/cm^2 recited in instant claim 10. Asano teaches that if the density of brush fibers is less than 4.5 x 10^2/cm^2, "not only rigidity is low and abrasion pressure is weak but also uneven abrasion is caused, which makes uniform removal of adhered substances impossible." If the density of brush fibers is not less than 2.0 x 10^4/cm^2, the "brush becomes too rigid to increase abrasion pressure which abrade a photoreceptor, resulting in generation of image defects such as fog due to reduced sensitivity and black streaks due to abrasion marks." Paragraph 0086. Thus, the reference appears to recognize that the density of brush fibers is a result-effective variable. The optimization of a result-effective variable is presumably within the skill of the ordinary worker in the art.

Asano does not explicitly state that its elastic rubber cleaning blade **66A** applies a pressure of "5 g/cm to 30 g/cm" on the photoreceptors as recited in instant claim 1.

However, JP'417 discloses a cleaning device for removing toner from an organic photoreceptor that appears to be the same or substantially the same as disclosed by Asano. The JP'417 cleaning device comprises an elastic rubber cleaning blade **5** and a brush **4**. Translation, Fig. 1 and paragraphs 0013 and 0023. The cleaning blade **5** contacts the photoreceptor in a direction counter to the rotating direction of the photoreceptor, as taught by Asano. Translation, paragraphs 0014 and 0026. The brush **4** comprises fibers having a thickness of 6 to 30 deniers and has a density of brush fibers of from 4.5×10^2 f/cm^2 to 15.5×10^2 f/cm^2. Translation, paragraphs 0017-0019. The JP'417 fiber thickness range overlaps the Asano preferred thickness range of 5 to 20 deniers. The JP'417 fiber density is within the Asano fiber density range of 4.5×10^2/cm^2 to 2.0×10^4/cm^2. JP'417 exemplifies a brush comprising fibers having a thickness of 15 deniers and having a density of fibers of 9.3×10^2 f/cm^2. See the translation, paragraph 0058. The JP'417 exemplified brush meets the Asano preferred fiber thickness and density requirements. The JP'417 exemplified brush also meets the fiber

thickness and density limitations recited in instant claims 9 and 10, respectively.

JP'417 teaches that the pressure of the blade on the surface of photoreceptor is from 5 g/cm to 30 g/cm. Translation, paragraphs 0013 and 0023. The pressure of 5 g/cm to 30 g/cm meets the pressure range recited in instant claim 1. According to JP'417 when the pressure under which the elastic rubber blade is pressed onto the photosensitive material surface is lower than 5 g/cm, "it becomes impossible to achieve sufficient cleaning effects, due to which secondary toner transfers, etc. become unavoidable." When the pressure exceeds 30 g/cm, the "abrasion wear of the photosensitive material becomes conspicuous, accompanied by a photosensitive material sensitivity loss, due to which image defects such as fogging, etc. become unavoidable." Translation, paragraph 0025.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Asano and JP'417, to use the JP'417 exemplified cleaning brush, which is within the teachings of Asano, as the cleaning brush in the cleaning device disclosed by Asano, and to use the contact pressure taught by JP'417 between the surface of the photoreceptors and the elastic rubber cleaning blade **66A** in the cleaning device of Asano in the cleaning step in the image forming methods

disclosed by Asano. That person would have had a reasonable expectation of successfully practicing image forming methods that effectively remove toner remaining on the surface of the photoreceptors and that provide the toner images that are free from the defects of fog, as taught by JP'417.

Asano does not exemplify the use of the particular toner recited in the instant claims. However, Asano does not limit the type of toner used. Asano, paragraph 0010 and reference claim 1.

Uchida discloses a black toner comprising a colorant, a binder resin, and the ester wax no. 21, pentaerythrytol tetrabehenate. The toner has an average circularity of 0.964 with a standard deviation of circularity of 0.031. Ester compound No. 21 at page 3; Latex 1 in Table 1 at page 11; color particles group 1 in Table 2 at page 12 and Table 5 at page 13. The ester wax no. 21 meets the wax limitations recited in instant claims 1 and 15. The Uchida average circularity and standard deviation of circularity fall within the ranges of average circular degree and standard deviation of circular degree recited in instant claims 1 and 13 and in claim 14, respectively. The Uchida average circularity and standard deviation of circularity have the same definitions as the average circular degree and standard deviation of the circular

degree recited in the instant claims. Uchida, paragraphs 0112-0113 and paragraph 4 supra. Uchida further discloses a yellow toner, a magenta toner, and a cyan toner that meet the toner limitations recited in instant claims 1 and 13-15. According to Uchida, its toner has excellent high fixing characteristics without the occurrence of offset. The toner is said to: provide high quality images after long storage; provide stable images for many repeated uses; and minimize the problem of photoreceptor filming and "deformation of image blurring." Paragraph 0005 and Tables 7 and 8, example 1.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Uchida, to use the Uchida toners in the image forming methods rendered obvious over the combined teachings of Asano and JP'417. That person would have had a reasonable expectation of successfully practicing image forming methods that have the advantages taught by JP'417, and that further provide stable high quality single toner images or stable high quality full color images as taught by Uchida.

Uchida does not exemplify a toner comprising a metal salt of a fatty acid as recited in the instant claims. However, Uchida discloses that its toner may be "advantageously employed when combined with external additives of fine particles, such as

fine inorganic particles and fine organic particles." Paragraph 0123. Uchida does not limit the type of external additives used.

Hagi teaches toners comprising toner particles and a combination of four particular external additives. The combination of external additives comprises: (1) hydrophobic silica particles having a number-average particle size of 30 nm; (2) titanium oxide particles having a number-average particle size of 50 nm; (3) titanium oxide particles having a number-average particle size of 200 nm; and (4) calcium stearate having a volume average particle size of 5 μm in an amount of 0.1 wt% of the toner. See col. 9, lines 53-68; col. 10, lines 1-14; and Table 1 at col. 11, example 2. Calcium stearate meets the limitations of the fatty acid metal salt recited in instant claim 1. The calcium stearate amount of 0.1 wt% of the toner is within the amount range of 0.01 to 10% by weight of the toner recited in instant claim 1. According to Hagi, when a toner comprises such a combination of external additives, the adhesion to and the wear of the surface of the photosensitive material is suppressed, and the toner "exhibits the excellent rising property of the electrification, environmental stability and durability." Col. 2, lines 12-22. Hagi further teaches that by externally adding the fatty acid metal salt, i.e., calcium

stearate, to the toner, a "lubricative film is uniformly formed on the surface of the photosensitive member to prevent the adhesion on said surface, and the occurrence of BS [black spots] can be prevented (a lubricating function)." Col. 5, lines 53-57, and Table 3 at col. 13, example 2.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hagi, to use the combination of the four particular external additives in example 2 of Hagi, which includes calcium stearate in an amount of 0.1 wt% of the toner, as the external additives in the toners in the image forming methods rendered obvious over the combined teachings of Asano, JP'417, and Uchida. That person would have had a reasonable expectation of successfully practicing image forming methods that have the advantages taught by JP'417 and Uchida; and that further suppress the adhesion to and the wear of the surface of the photoreceptor, that provide images with stable image density without the occurrence of fog under various environments, and that provide images without the occurrence of fog after many repeated runs, as disclosed by Hagi.

8. Applicants' arguments filed on Oct. 12, 2007, as applicable to the rejection over Asano in paragraph 7 above have been fully considered but they are not persuasive.

Applicants assert that the amendment to claim 1 filed on Dec. 13, 2007, which adds the limitations of now-cancelled dependent claims 3, 11, 16, and 17, defines the claimed invention over the references taken alone or in combination. Applicants assert that the prior art rejections set forth in the office action mailed on Jun. 14, 2007, did not reject a claim that contains all the limitations which are now in instant claim 1.

Applicants' assertions are not persuasive. For the reasons discussed in paragraph 7 above, the subject matter recited in the instant claims is prima facie obvious over the combined teachings of the cited references. Accordingly, the rejection in paragraph 7 stands.

9. The examiner notes that US Application No. 10/952,128 (Application'128) issued as US Patent No. 7,285,366 B2 (Itami) on Oct. 23, 2007. Accordingly, the provisional obviousness-type double patenting rejections over claims 1-13 of Application'128, set forth in the office action mailed on Jun. 14, 2007, paragraphs 14-16, have been replaced with the following non-provision rejections set forth infra.

10. Claims 1, 9, 10, 13-15, and 18-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 27 of US Patent No. 7,285,366 B2 (Itami) in view of US 2001/0031417 A1 (Nagase), Hagi, and JP'417. See the USPTO translation of JP'417 for cites.

Reference claim 27, which depends from reference claim 1, covers an image forming method comprising the step of developing an electrostatic latent image formed on the organic photoreceptor described in reference claim 1. The organic photoreceptor of reference claim 1 comprises a conductive support and a light sensitive layer, where the toner image forming surface comprises inorganic particles and has a surface roughness Ra between 0.02 and 0.1 μm. The surface roughness Ra overlaps the surface roughness Ra of not less than 0.02 μm to less than 0.1 μm recited in instant claim 1. Reference claim 3, which depends from reference claim 2, which in turn depends from reference claim 1, requires that the inorganic particles be hydrophobic silica and that they have a number-based average primary particle diameter between 1 nm to less than 100 nm. The hydrophobic silica particles meet the hydrophobic silica particles limitations recited in instant claims 1 and 19.

The reference claims in Itami do not recite the steps of transferring the developed toner image to a recording medium, fixing the toner image, and removing the toner remaining on the photoreceptor as recited in instant claim 1. Nor do the reference claims recite the particular toner recited in the instant claims.

However, the transferring and fixing steps are well known to persons having ordinary skill in the art of electrophotography, as shown by Nagase.

Nagase teaches an image forming method that meets the developing, transferring, and fixing steps recited in the instant claims but for using the particular photoreceptor recited in the instant claims. The Nagase method comprises the steps of: (1) developing a latent image on a photoreceptor with a developer comprising a toner; (2) transferring the toner image to a recording medium; (3) fixing the toner image to the recording medium; and (4) removing the toner remaining on the photoreceptor with a cleaning device. Nagase further teaches a full color image forming method comprising the steps of: (1) forming four electrostatic latent images on four photoreceptors, which correspond to a yellow image, a magenta image, a cyan image, and a black image, respectively; (2) developing the four latent images with the corresponding colored toners; (3)

transferring the four colored toner images from the four photoreceptors to a receiving member; (4) fixing the transferred toner images to the receiving member; and (5) cleaning the toner remaining on each of the four photoreceptors with a cleaning device. Figs. 2 and 3; and paragraphs 0078 and 0084-0093. The cleaning device comprises a cleaning blade. See Fig. 2.

Nagase further teaches toners that meet the toner limitations recited in the instant claims. Nagase teaches a black toner comprising a colorant, a binder resin, and the ester wax no. 19, pentaerythrytol tetrabehenate. The toner has an average circularity of 0.970 with a standard deviation of circularity of 0.034. Ester compound No. 19 at page 9; Latex 5 in paragraph 0281; black toner 5Bk in Table 1 at page 18. The ester wax no. 19 meets the wax limitations recited in instant claims 1 and 15. The Nagase average circularity and standard deviation of circularity fall within the ranges of average circular degree and standard deviation of circular degree recited in instant claims 1 and 13 and in claim 14, respectively. The Nagase average circularity and standard deviation of circularity have the same definitions as the average circular degree and standard deviation of the circular degree recited in the instant claims. Nagase, paragraphs 0249-0251 and paragraph 4 supra. Nagase further

discloses a yellow toner, a magenta toner, and a cyan toner that meet the toner limitations recited in instant claims 1 and 13-15. Yellow toner 5Y in Table 2 at page 19, magenta toner 5M in Table 3 at page 20, and cyan toner 5C in Table 4 at page 20.

According to Nagase, its toners are capable of forming color images, which exhibit excellent fixability and offsetting resistance, as well as excellent color reproduction over an extended period of time. Paragraphs 0027 and 0030. Nagase further teaches that its image forming method provides excellent and consistent color reproduction properties over an extended period of time. Paragraph 0029.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter claimed in Itami, to make and use a photoreceptor as recited in instant claims 1 and 19, and to use the resultant photoreceptor in the image forming method claimed in Itami. It would have also been obvious for that person, in view of the teachings of Nagase, to incorporate the additional transferring, fixing, and cleaning steps taught by Nagase and to use the Nagase toners in the image forming method rendered obvious over the subject matter claimed in Itami. That person would have had a reasonable expectation of successfully practicing image forming methods that provide

color toner images and full color toner images having excellent color reproduction over an extended period time as taught by Nagase.

Nagase does not exemplify toners comprising a metal salt of a fatty acid as recited in the instant claims. However, Nagase discloses that the toner may comprise "so-called external additives" for the purpose of "improving fluidity as well as chargeability, and of enhancing cleaning properties" of the toner. Nagase does not limit the type of external additives used. Paragraph 0191.

Hagi teaches toners comprising toner particles and a combination of four particular external additives. The external additives include calcium stearate having a volume average particle size of 5 μm, in an amount of 0.1 wt% of the toner. The calcium stearate disclosed by Hagi meets the limitations of the fatty acid salt recited in instant claim 1. The calcium stearate amount of 0.1 wt% of the toner is within the amount range of 0.01 to 10% by weight of the toner recited in instant claim 1. The discussion of Hagi in paragraph 7 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hagi, to use the combination of the four particular external additives in

example 2 of Hagi, which includes calcium stearate in an amount of 0.1 wt% of the toner, as the external additives in the toner in the image forming methods rendered obvious over subject matter claimed in Itami combined with the teachings of Nagase. That person would have had a reasonable expectation of successfully practicing image forming methods that suppress the adhesion to and the wear of the surface of the photoreceptor; that provide images with stable image density without the occurrence of fog under various environments; and that provides images without the occurrence of fog after many repeated runs, as disclosed by Hagi.

Nagase does not disclose the use of a cleaning blade or a cleaning brush as recited in instant claims 1, 9, 10, and 20. However, as discussed above, Nagase discloses that the cleaning device can comprise a cleaning blade. See Fig. 2. Nagase does not limit the type of cleaning device used.

JP'417 discloses a cleaning device for removing toner from an organic photoreceptor. The cleaning device comprises an elastic rubber cleaning blade **5** and a brush **4**. Translation, Fig. 1 and paragraphs 0013 and 0023. The cleaning blade **5** contacts the photoreceptor in a direction counter to the rotating direction of the photoreceptor. Translation, paragraphs 0014 and 0026. The pressure of the cleaning blade **5**

on the photoreceptor is from 5 g/cm to 30 g/cm. Translation, paragraphs 0013 and 0023. The brush **5** comprises fibers having a thickness of 6 to 30 deniers. The density of brush fibers is from 4.5 x 10^2 f/cm^2 to 15.5 x 10^2 f/cm^2. Translation, paragraphs 0017-0019. The cleaning blade **5** meets the cleaning blade limitations recited in instant claims 1 and 20. The brush **4** meets the brush limitations recited in instant claims 9 and 10. According to JP'417, when its cleaning device is used in an image forming method, the cleaning device effectively removes the toner remaining on the photoreceptor without damaging the surface of the photoreceptor and decreasing the wear of the photoreceptor. Translation, paragraphs 0017 and 0025. The image forming method provides good quality images, e.g., up to 200,000 copies, for a long period of time. Paragraphs 0011, 0076, and 0078. JP'417 further discloses that when its cleaning device is not used in the image forming method, the image quality deteriorates after many repeated runs. Paragraph 0077, and Table 1, comparison examples 1-7.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of JP'417, to use the JP'417 cleaning device as the cleaning device in the image forming methods rendered obvious over the subject matter claimed in Itami combined with the teachings of Nagase and Hagi. That

person would have had a reasonable expectation of successfully practicing image forming methods that effectively remove toner remaining on the surface of the photoreceptor and that provide good quality images, e.g., up to 200,000 copies, for a long period of time, as taught by JP'417.

11. Claims 1, 6, 7, 9, 10, 13-15, and 18-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 27 of Itami in view of Nagase, Hagi, and US 5,438,400 (Kuribayashi).

The subject matter recited in Itami, in view of the teachings of Nagase and Hagi, renders obvious image forming methods as described in paragraph 10 above, which is incorporated herein by reference.

Nagase does not disclose the use of a cleaning blade as recited in instant claims 1, 6, 7, and 20. However, as discussed above, Nagase discloses that the cleaning device can comprise a cleaning blade. See Fig. 2. Nagase does not limit the type of cleaning device used.

Kuribayashi discloses a cleaning apparatus for removing toner from photosensitive drums, such as organic photoconductive (OPC) photosensitive drums, also known in the electrophotographic arts as photoreceptors, used in

electrophotographic processes. The cleaning apparatus comprises a cleaning blade **9** that is abutted against the photosensitive drum **2** "from a direction opposite to a rotational direction of the photosensitive drum **2**," as recited in instant claim 7. Col. 3, lines 50-57; and Fig. 2A. The Kuribayashi cleaning blade **9** is the only cleaning device in its cleaning apparatus. Thus, the Kuribayashi cleaning blade **9** meets the cleaning device limitation recited in instant claim 6.

Kuribayashi teaches that the cleaning blade **9** is made of a urethane rubber and has a surface coated layer at the tip end abutting the photosensitive drum. The surface coated layer comprises a nylon resin and graphite fluoride particles. The surface coated layer has a liquid drip portion at a portion remote from the tip end of said cleaning blade, wherein the width from said liquid drip portion to the tip end of said cleaning blade is greater than the width of the abutment area between the photosensitive drum and cleaning blade, such that said liquid drip does not abut against the drum when the cleaning blade is abutted against the drum. See reference claims 10 and 11; col. 4, lines 26-45; col. 5, lines 18-44; and Figs. 2B and 2C. According to Kuribayashi, the application of the surface coated layer reduces the friction force between the cleaning blade and the OPC photosensitive drum, "thereby

preventing the turn-up of the blade to perform the effective cleaning operation." Col. 4, lines 21-25. Kuribayashi further teaches that the particular location of the liquid drip portion of the surface coated layer prevents the problems that occur with uneven abutment pressure between the blade and the photosensitive drum. Col. 5, lines 22-33.

In Fig. 2A, Kuribayashi teaches that the cleaning blade **9** is abutted against the photosensitive drum **2** "at an abutment angle α (an angle between a blade supporting member **11** . . . and a flat contact plane between the cleaning blade and photosensitive drum including the abutment portion of the photosensitive drum) of 25 degrees and with an abutment pressure of 20 g/cm." According to Kuribayashi, "in order to effect a good cleaning operation, it is preferable that the abutment angle α is set within a range of 24 to 30 degrees and the abutment pressure is set within a range of 15 to 40 g/cm." Fig. 2A and col. 5, lines 6-17. The abutment pressure of 20 g/cm is within the pressure range of 5 g/cm to 30 g/cm recited in instant claim 1.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Nagase and Kuribayashi, to use the Kuribayashi cleaning apparatus as the cleaning device in the cleaning step in the image forming

methods rendered obvious over the subject matter claimed in Itami combined with the teachings of Nagase and Hagi, such that the Kuribayashi cleaning blade is abutted against the photoreceptors at an angle of 25 degrees and with an abutment pressure of 20 g/cm in the cleaning step in said methods. That person would have had a reasonable expectation of successfully practicing image forming methods that effectively remove toner remaining on the surface of the photoreceptor as taught by Kuribayashi.

12. Applicants' arguments filed on Oct. 12, 2007, as applicable to the rejections set forth in paragraphs 10 and 11 above have been fully considered but they are not persuasive.

Applicants assert that in light of the amendment to claim 1 filed on Dec. 13, 2007, described in paragraph 8 supra, the double patenting rejections over the claims in Application'128 (Itami) have been overcome.

Applicants' assertion is not persuasive. For the reasons discussed in paragraphs 10 and 11 above, the subject matter recited in the claims of Itami combined with the teachings of the prior art renders the subject matter recited in the instant claims obvious. Accordingly, the rejections stand.

13. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Sandra Sewell, whose telephone number is (571) 272-1047.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on

access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Janis L. Dote/
Primary Examiner, Art Unit 1795

JLD
Mar. 4, 2008